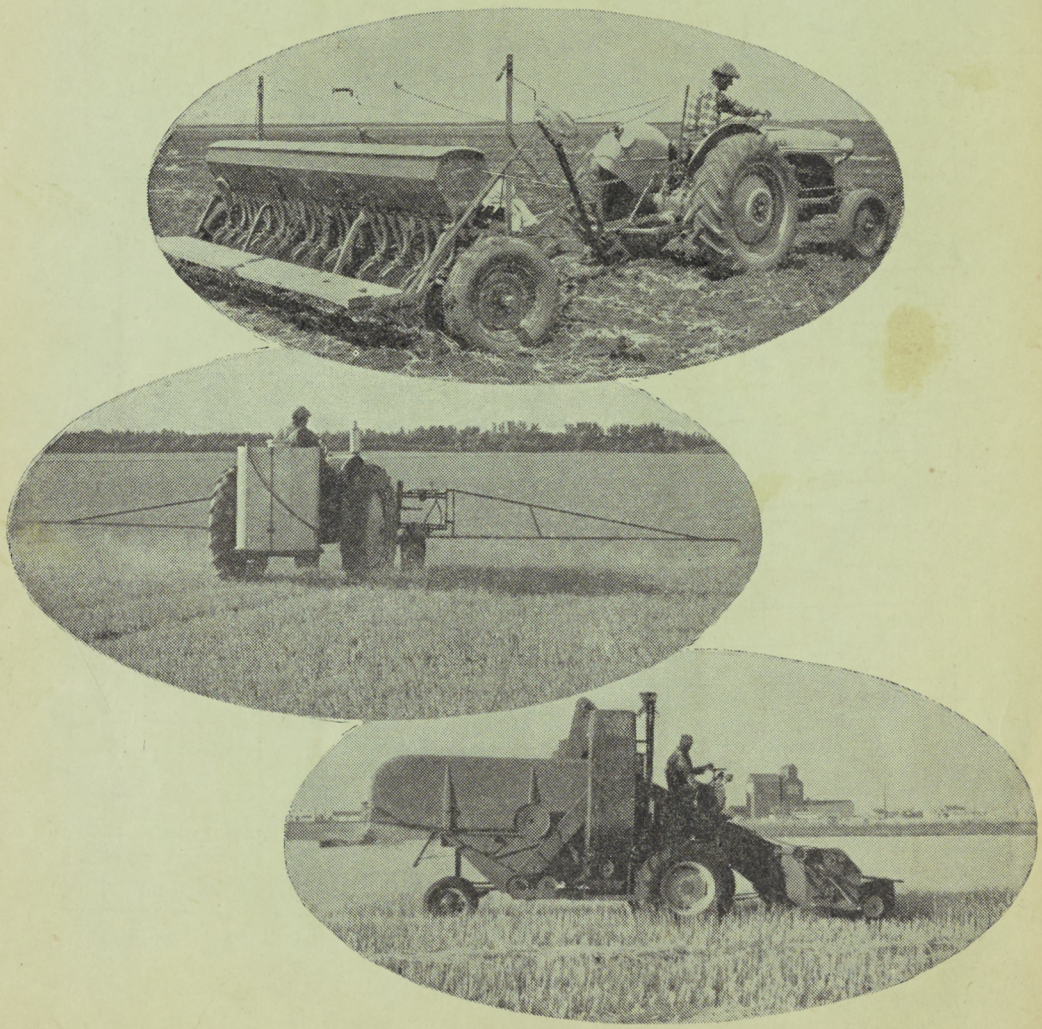
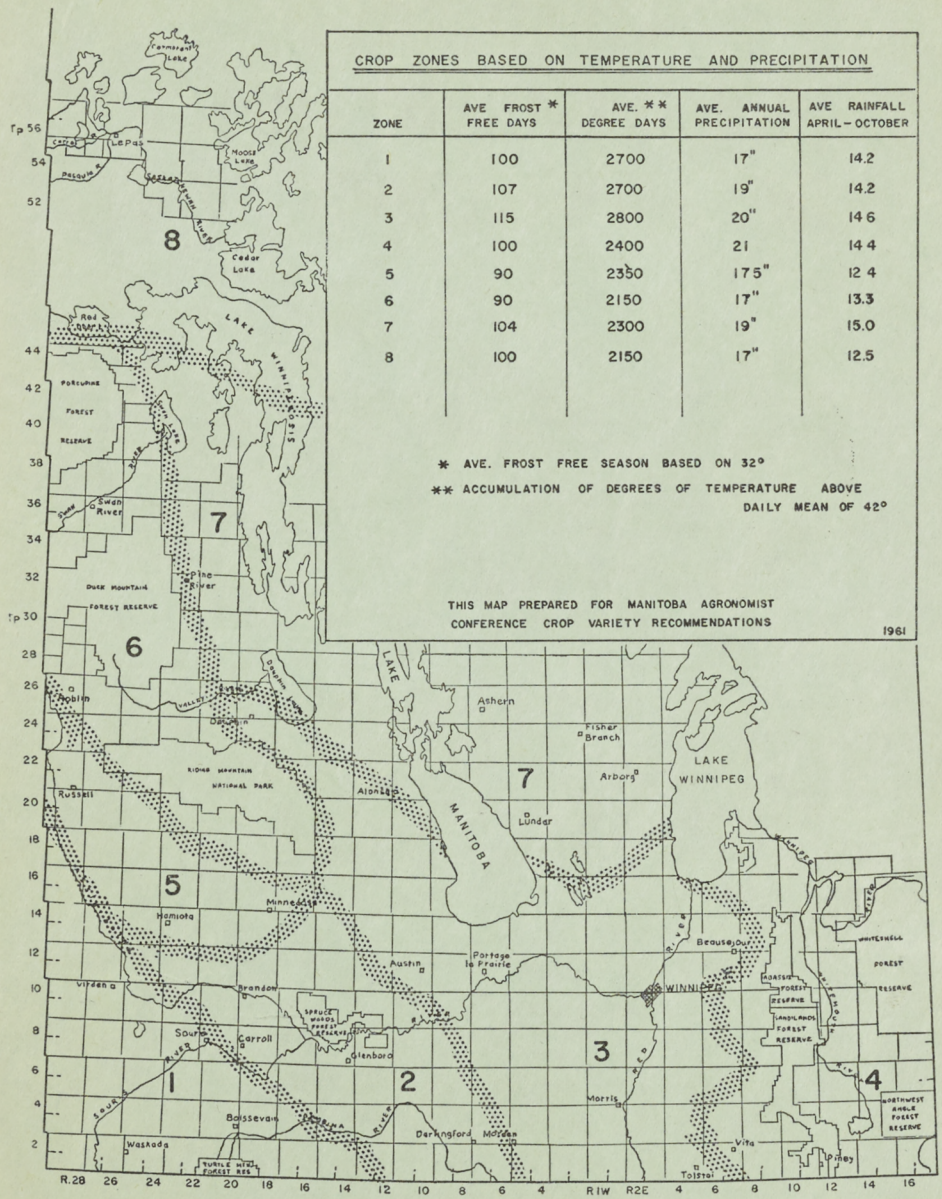
MANITOBA DEPARTMENT OF AGRICULTURE AND CONSERVATION
WINNIPEG, CANADA

FIELD CROP RECOMMENDATIONS for MANITOBA 1964



As approved by
Manitoba Agronomists' Conference, December 1963

CROP VARIETY ZONATION MAP FOR MANITOBA



CROP ZONES BASED ON TEMPERATURE AND PRECIPITATION

ZONE	AVE FROST * FREE DAYS	AVE. ** DEGREE DAYS	AVE. ANNUAL PRECIPITATION	AVE RAINFALL APRIL – OCTOBER
1	100	2700	17"	14.2
2	107	2700	19"	14.2
3	115	2800	20"	14 6
4	100	2400	21	14 4
5	90	2350	175"	12 4
6	90	2150	17"	13.3
7	104	2300	19"	15.0
8	100	2150	17"	12.5

* AVE. FROST FREE SEASON BASED ON 32°

** ACCUMULATION OF DEGREES OF TEMPERATURE ABOVE DAILY MEAN OF 42°

THIS MAP PREPARED FOR MANITOBA AGRONOMIST CONFERENCE CROP VARIETY RECOMMENDATIONS

1961

VARIETY RECOMMENDATIONS

CROP	ZONES	Order of Preference	VARIETIES LISTED ALPHABETICALLY
COMMON WHEAT	All Zones	1 2	Pembina, Selkirk Lee (Less rust resistance, loose smut susceptible).
DURUM WHEAT	1, 2, 3, 5	1 2	Stewart 63 Ramsey (Resistant to most races of stem rust.)
OATS	All Zones	1	Garry, Rodney,* Russell *See General Remarks
HULLESS OATS	All Zones	1	Vicar. See General Remarks.
BARLEY ELIGIBLE FOR C.W. 6 ROW GRADES	1, 2, 3, 4, 5, 6 ,7	1	Parkland
	8	1	Montcalm, Parkland
FEED BARLEY	1, 2, 3, 4, 5, 6, 7	1	Herta, Jubilee, Keystone
	8	1	Husky, Jubilee, Keystone
FLAX	1, 2, 3, 5	1 2	Redwood, Rocket Raja
	4	1 2	Rocket Raja, Redwood
	6, 7, 8		See under General Remarks—Flax
SPRING RYE	All Zones	1	Prolific
FALL RYE	All Zones	1	Antelope, Dakold
FIELD PEAS	1, 2, 3, 4	1	Arthur, Chancellor, Creamette
	5, 6, 7, 8	1	Chancellor
GRAIN CORN	3	1	A.E.S. 101, Kingscrost KN2, Morden 77, Morden 88
SILAGE CORN	All Zones	1	Falconer, Jacques 1F, Multicross 80, Rainbow Flint, Wheatland Blend
ALFALFA	All Zones	1 2 3 4	Vernal Ladak Rambler Beaver
SWEET CLOVER	All Zones	1	Arctic (white), Erector (yellow)
BROME GRASS	All Zones	1 2	Lincoln (Southern type) Carlton (Northern type)

GENERAL REMARKS

RODNEY OATS

In the Red River Valley, Rodney should be sown early to avoid damage from race 7A of oat stem rust and from septoria leaf and stem disease.

HULLESS OATS

As hulless oats tend to heat in storage they must be harvested only when thoroughly ripened and only under dry conditions.

OTHER RECOMMENDED FORAGE CROPS

Crested Wheat Grass ____ Summit
Intermediate Wheat Grass ____ Chief
Meadow Fescue ____ Ensign
Slender Wheat Grass ____ Primar
Timothy ____ Climax

OIL SEED CROPS

FLAX

The varieties Arny, Cree, Marine and Sheyenne are susceptible to new strains of flax rust and should not be sown. Flax rust can reduce the yields of these varieties by 50 percent or more. The varieties Raja, Redwood and Rocket are rust resistant. The late maturing varieties, Redwood and Rocket, should be sown early for maximum yield. For late sowing Raja should be used, although this variety prolongs its flowering and grows taller in cool seasons. Redwood and Rocket have given the best yields in zones 6, 7 and 8, but are late maturing and must be seeded early. (See note on Flax Rust.).

SUNFLOWERS

General area comprising crop variety zone 1, 2 and 3 south of township 13. **Oilseed type** — first choice Peredovik — high yield, high oil content, susceptible to rust. Second choice — Admiral and Advent — resistant to rust. **Large Seed Type** — Mennonite — rust susceptible. Plant sunflowers as far away as possible from last year's sunflower fields. Keep sunflowers at least four years apart in the rotation to aid in disease and insect control.

RAPESEED

First choice — Tanka — high in yield and oil content, large seed. Arlo and Polish are somewhat lower yielding but mature earlier and are recommended for the northerly areas or if seeding must be delayed. Generally rapeseed should be sown early for maximum yields, more uniform ripening and better grade.

SOYBEANS

Can be grown in the southern part of the Red River Valley. Early Variety: Acme. Flambeau is higher yielding, but very late. Weed control is essential for successful soybean production.

POTATOES

VARIETY RECOMMENDATIONS—

Early Varieties: Warba, Red Warba, Norland.

Main Crop Varieties: Red—Pontiac, Norland; **White**—Irish Cobbler, Kennebec; **Russet**—Netted Gem.

Insect and Disease Control Recommendations (other than Colorado Potato Beetles): Regular applications at 10 day intervals of complete potato dusts or sprays containing DDT plus one of the following fungicides: fixed copper, dithane, parzate or nabam. Recommended rates as given on commercial containers are correct and should be followed. For Colorado Potato Beetles, toxaphene, dieldrin and heptachlor are recommended.

PLANT DISEASE CONTROL RECOMMENDATIONS

SEED TREATMENT (Cereals and Flax)

1. Seed of cereals and flax should be cleaned and then treated with an officially approved seed disinfectant to protect against the harmful effects of sowing diseased or unsound seed. All chemical seed treatment products sold in Canada carrying a Pest Control Products Act number (P.C.P. No.) are suitable for the purposes claimed on the label. For maximum effectiveness directions on the package must be carefully followed. Formaldehyde and copper sulphate (bluestone) are not recommended seed treatment chemicals on account of injury to germination.
2. Seed should be treated at least 24 hours before sowing, except for oats and barley which should be treated at least a week before sowing unless otherwise specified by the manufacturer. Rate of application and uniformity of coverage are very important.
3. **Most seed disinfectants are poisonous. Guard against inhaling dust or fumes. Wash well periodically to remove chemicals lodging on hands and face while treating seed. Seed disinfectants containing PMA (phenyl mercury acetate) cause severe blistering, and should be washed off the hands immediately. Treated grain should not be mixed with untreated grain for feed or sale. Equipment used in moving treated grain should be cleaned thoroughly before it is used for untreated grain.**

"LOOSE SMUT CONTROL"

"The recommended varieties of common wheat (excepting Lee) and the feed-barley variety Keystone are resistant to the loose smuts. The other recommended varieties of feed barley, malting barley and durum wheat are susceptible. If a susceptible variety is sown, use seed that is known to be free, or nearly so, of loose smut infection. If a treatment is necessary consult your Agricultural Representative. Chemical seed treatment is ineffectual".

FLAX RUST

The varieties Arny, Cree, Marine and Sheyenne are susceptible to new and dangerous races of rust and should not be sown. Flax rust overwinters in Manitoba and can attack the crop early in the season. New races, which can attack formerly resistant varieties, may be produced. It is important, therefore, not to sow flax on flax stubble or near fields that produced rusted flax the previous season. Early control of volunteer flax is recommended.

ERGOT CONTROL

As a precaution against infection by ergot in cereals, it is recommended that grass headlands be cut before the time of flowering. Ergot infection can be reduced by the use of ergot-free seed, and by avoiding sowing durum wheat and rye in fields that were heavily infested with ergot in the previous year.

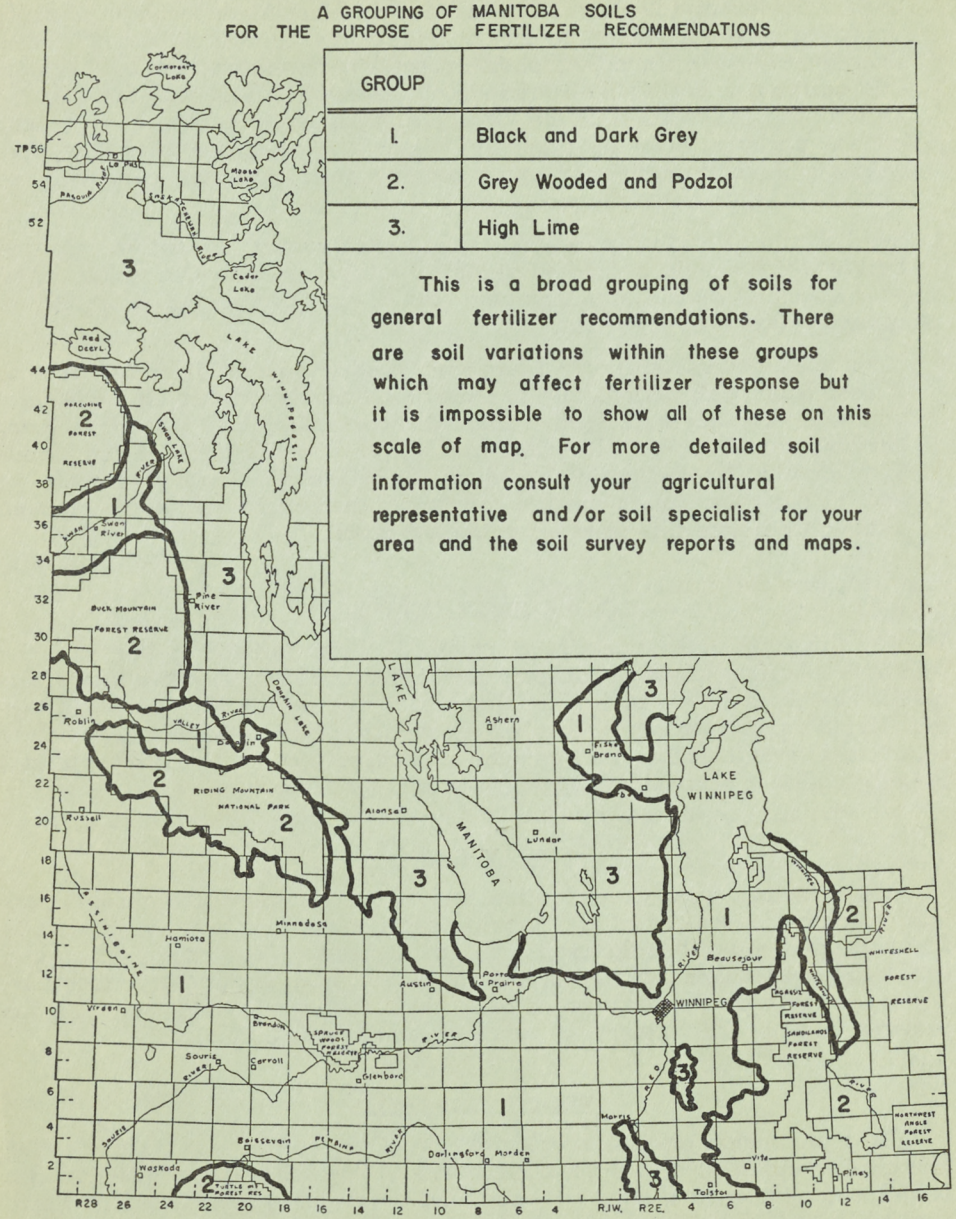
CONTROL OF BARLEY LEAF SPOT DISEASES

The fungi causing leaf spot diseases of barley overwinter on barley straw and stubble. Do not sow barley after barley.

A GROUPING OF MANITOBA SOILS FOR THE PURPOSE OF FERTILIZER RECOMMENDATIONS

GROUP	
1.	Black and Dark Grey
2.	Grey Wooded and Podzol
3.	High Lime

This is a broad grouping of soils for general fertilizer recommendations. There are soil variations within these groups which may affect fertilizer response but it is impossible to show all of these on this scale of map. For more detailed soil information consult your agricultural representative and/or soil specialist for your area and the soil survey reports and maps.



FIELD CROP FERTILIZER RECOMMENDATIONS

These are general recommendations. For specific recommendations to individual fields, have your soil analyzed by the Provincial Soil Testing Laboratory, Department of Soil Science, University of Manitoba, Winnipeg.

N = Nitrogen P_2O_5 = Phosphate K_2O = Potash S = Sulphur.

Crop and Management	Soil	Recommended Nutrients Lbs./Acre			
		N	P_2O_5	K_2O	S
CEREAL CROPS:					
Fallow and Legume Breaking	Black and Dark Grey	5-10	20-30	0	0
	Grey-Wooded and Podzol	5-10	20-30	0	0
	High Lime	5-10	20-30	0	0
Stubble and Grass Breaking	Black and Dark Grey	15-40	10-30	0	0
	Grey-Wooded and Podzol	15-40	10-30	0	0
	High Lime	15-40	15-30	0	0

Fertilizers containing phosphate should be drilled in with the seed. Nitrogen may be applied with the seed up to 25 lbs. per acre. When more nitrogen is required it must be broadcast to avoid seed injury.

CANARY SEED: Same as Cereals.

RAPESEED AND MUSTARD:	N	P_2O_5	K_2O	S
Fallow and Legume Breaking	5-10	20-30	0	0
Stubble and Grass Breaking	30-50	20-30	0	0
SUGAR BEETS:				
Fallow and Legume Breaking	7-10	30-40	0	0
Stubble	25-40	30-40	0	0

Phosphate fertilizer should be drilled in with the seed for rapeseed, mustard and sugar beets. Nitrogen may be applied with the seed up to 10 lbs. per acre. When more nitrogen is required it must be broadcast to avoid seed injury.

FLAX: Fertilizer should be applied according to the need indicated by soil test or field trial.

FORAGE CROPS:		N	P_2O_5	K_2O	S
Seeded grass for seed, hay or pasture	Black and Dark Grey	30-85	0-35	0	0
	Grey-Wooded and Podzol	30-85	0-35	0	0
	High Lime	30-85	18-35	0	0
Legume and Grass Legume mixture	Black and Dark Grey	5-11	35-50	0	0
	Grey-Wooded and Podzol	5-11	35-50	0	10-25
	High Lime	5-11	35-50	0	0

Fall application of fertilizer on forage crops is preferable to spring application.

CROPS LISTED BELOW SHOULD BE FERTILIZED BY SIDE BAND APPLICATION

		N	P_2O_5	K_2O	S
SUNFLOWERS:		15-20	10-20	0	0
POTATOES:	Sandy Loams	30-60	30-45	15-25	0
	Clay Loam to Clay	30-45	30-60	0	0
CORN:		20-40	10-25	0	0

Fertilizers containing phosphate should be applied as a side band at the time of seeding. The nitrogen may be applied by side band at the time of seeding or when the corn is 6 inches high.

NOTES

Sandy Soils — Sandy textured soils may be low in available potash. The degree of deficiency can best be determined by soil test.

Peat Soils — Most peat soils are low in available phosphate. Use the recommendations for the high lime soils.

Saline or "Alkali" Soils — A soil test is recommended as a guide to the management of saline soil. For further guidance on the management of these soils obtain a copy of publication #360 "The Nature and Management of Saline Soils" prepared by the Manitoba Department of Agriculture and Conservation.

Plant Nutrients Supplied by Certain Rates of Common Fertilizer Materials

Fertilizer analysis	Rate of application lbs. per acre	N lbs./acre	P_2O_5 lbs./acre	K_2O lbs./acre	S lbs./acre (approx.)
11-48-0	40	4.4	19.2	0	1
16-48-0	40	6.4	19.2	0	—
16-20-0	100	16	20	0	14
23-23-0	80	18.4	18.4	0	—
24-20-0	80	19.2	16	0	—
27-14-0	80	21.6	11.2	0	—
21-0-0	100	21	0	0	24
33½-0-0	100	33.5	0	0	—
45-0-0*	100	45	0	0	—
46-0-0*	100	46	0	0	—
82-0-0	100	82	0	0	—
0-0-60	50	0	0	30	—
10-30-10	200	20	60	20	10
14-14-7	200	28	28	14	28
13-13-13	200	26	26	26	24
Gypsum	50	0	0	0	9

*Do not drill in with the seed.

Pounds of Fertilizer to Supply Required Nutrient

Fertilizer	Pounds of Nitrogen Required									
	5	10	15	20	25	30	35	40	45	50
11-48-0	45	91	136	182	227	273	318	364	409	455
16-20-0	31	63	94	125	156	188	219	250	281	313
23-23-0	22	44	65	87	109	130	152	174	196	217
24-20-0	21	42	63	84	104	125	146	167	188	208
27-14-0	19	37	56	74	93	111	130	148	166	185
33½-0-0	15	30	45	59	75	90	104	119	134	149
46- 0-0	11	22	33	44	54	65	76	87	98	109

	Pounds of Phosphate (P_2O_5) Required									
	5	10	15	20	25	30	35	40	45	50
11-48-0	10	21	31	42	52	63	73	83	94	104
16-48-0	10	20	30	40	50	60	70	80	90	100
16-20-0	25	50	75	100	125	150	175	200	225	250
23-23-0	22	44	66	87	109	130	152	174	196	217
24-20-0	25	50	75	100	125	150	175	200	225	250
27-14-0	36	71	107	143	179	214	250	286	321	357

CHEMICAL WEED CONTROL RECOMMENDATIONS

Suggested Amounts of 2,4-D and MCPA Acid Per Acre to Use as Spray to Control Weeds in Manitoba

Spray crops every year for weed control and greater profit.

		Ounces Acid Equivalent Per Acre			
		Susceptible Annuals	Moderately Susceptible	Moderately Resistant	Double* Application
Examples of weeds within indicated susceptibility classes.		Lamb's quarters Ragweed Stinkweed	Cocklebur Flixweed Shepherd's purse	Lettuce, blue Mustard, dog Thistle, sow Canada Russian	Buckwheat, wild tartary Smartweeds Horsetail Hemp nettle
CROP	Formulation				
2,4-D					
Wheat, Barley, Rye	Ester	4-6	6-8	(9-12)	5+5
	Amine	5-7	7-9	(10-14)	6+6
MCPA					
Oats, Flax, Wheat, Barley, Rye	Ester	4-6	6-8	(9-12)	5+5
	Amine	5-7	7-9	(10-14)	6+6
	Sod. salt	6-8	8-10	(11-15)	7+7

*For maximum results, spray first application in seedling stage of weed growth (2 to 4 leaves). Follow with second application after 7 to 10 day interval. Use MCPA for the first application to avoid crop injury if the crop has not reached the safe stage to treat with 2,4-D.

EXPLANATORY NOTES

RATES: The proper rate to use in crops is determined by:

Stage of Growth—Weeds are much easier to control when treated early. Perennial weed growth is suppressed by early treatment.

Growing Conditions—Weeds are easier to control under good growing conditions. The higher rate ranges in each group are required under dry or cool weather conditions and heavy weed infestations.

Kinds of Weeds—Identify weeds and use the harder to kill weeds as a guide to select the rate of application.

Under certain conditions the higher rates (in brackets) may cause injury to the crop but this will be offset by obtaining a higher relative yield from a less weedy crop.

For Russian thistle control, 2,4-D is the preferred chemical at rates not less than 9 oz./acre.

CROP STAGE FOR SAFE TREATMENT

Greatest yield responses follow treatment at the earliest stage of crop growth.

Spring Wheat, Barley and Rye —

2,4-D—full 3rd leaf (6 inches) to early boot stage.

MCPA—emergence to early boot stage.

Corn—For control of broad leaved weeds apply 2,4-D amine or MCPA amine or sodium salt at rates of 4 to 6 ounces per acre. Apply as an overall spray up to the time the corn is 6 inches tall, after which a shielded or directed spray should be used.

DNBP Amine at 3 to 4½ lbs. per acre in 30 to 50 gallons of water is effective in controlling broadleaved weeds and annual grasses when applied immediately before or during the period of weed emergence.

Atrazine at 1½ lbs. per treated acre applied in 12 inch bands at planting time will control broadleaved and annual grass type weeds.

CAUTION—Residual effects of atrazine may cause injury to crops other than corn the year following treatment.

Oats—tolerant to MCPA at all growth stages; if 2,4-D amine is used, treatment should be made between emergence and the two-leaf stage of growth.

Flax—is susceptible to early weed competition. Treat when 2 to 3 inches in height. Severe injury will occur if flax is treated after buds have formed. Some delay in crop maturity can occur if spraying is not done at the recommended crop growth stage. Using high volumes of water (15 - 20 gal. per A) will reduce this chemical effect.

Peas (Field and Canning)

MCPA—amine at 4 to 5 oz. per acre; sodium salt at 5 to 6 oz. per acre. Treat when plants are from 4 to 8 inches in height. Increased volumes of water (15 - 20 gal. per A) will reduce risk of crop injury.

Dinitro amine—1½ to 3 lb per acre.

Apply as a pre-emergent treatment in at least 25 gallons of water per acre.

Seedling Legumes (Alfalfa, Red and Alsike Clover)

MCPA—amine at 4 to 5 oz. per acre; sodium salt at 5 to 6 oz. per acre. Use higher volumes of water in application to reduce the risk of crop injury.

CHEMICALS FOR HARD-TO-KILL WEEDS

Hard-to-kill weeds such as wild and tartary buckwheat, smartweeds (lady's thumb), Canada and sow thistle (top kill) can be effectively controlled in **wheat** and **oats** with dicamba (banvel D) at the rate of 2 to 4 oz. per acre applied during the 2 to 4 leaf stage of the crop.

Mixtures of dicamba and 2,4-D, MCPA or CMPP are recommended for the control of mixed infestations of hard-to-kill and 2,4-D susceptible weeds. Rates for these mixtures range from 6 to 8 ounces per acre applied in **wheat** and **oats** when in the 2 to 4 leaf stage. (Check label for specific instructions.)

For hemp nettle control in wheat, oats and barley, apply Celatox at 9 to 12 oz. per acre when the weed is in the 2 to 4 leaf stage. At these rates, 2,4-D susceptible weeds will also be controlled.

GREEN FOXTAIL CONTROL

NOTE: TCA and Dalapon must be thoroughly mixed in the sprayer before application. Continuous agitation for 10 to 15 minutes is recommended.

Apply these chemicals before the foxtail reaches the three-leaf stage.

Flax and Field Peas—Use 4 to 6 lbs. TCA per acre either alone or in combination with recommended rates of MCPA when broad-leaved weeds are present.

Sugar Beets—Use 4 to 6 lbs. TCA per acre before emergence or delay two weeks after emergence.

Rape—Use 4 to 6 lbs. TCA per acre.

Flax, Sugar Beets, Rape—Use ¾ to 1 lb. Dalapon per acre. Care must be exercised in measuring. Overlapping when spraying should be avoided.

WILD OAT CONTROL

Tillage practices which will promote maximum germination of wild oat seeds will enhance the value of wild oat herbicides.

IPC—Peas, Sugar Beets, Sunflowers, Soybeans, Rape — use 4 to 5 lbs. IPC per acre as a pre-planting treatment.

AVADEX—Flax, Sugar Beets, Rape, Sunflowers, Potatoes, Mustard and Corn— Use 1½ lbs. Avadex per acre applied as a pre-planting treatment in not less than 5 gals. of water per acre. Mix into the soil to a depth of not more than 3 inches immediately after spraying using a disc type implement. Two disc operations are suggested if the soil is wet and cloddy or trash cover heavy. The lower rate is suggested for use on summerfallow.

AVADEX BW—Barley—1¼ to 1½ lbs. Avadex BW per acre. **Field Peas** — 1½ lbs. per acre. **Wheat** — 1 - 1¼ lbs. per acre.

For field peas Avadex BW should be applied before seeding as recommended for Avadex. For barley treatment may be made before or after seeding. For wheat apply Avadex BW **after seeding** only. Seed the wheat (or barley) to a depth of 3 inches and apply the chemical in a minimum of 5 gallons water per acre and incorporate immediately with a single or double harrowing to a depth of 2 inches.

CARBYNE—Wheat, Barley, Flax, Rape, Peas (field and canning), Mustard and Sunflowers — Carbyne at 4 to 5 ounces per acre applied after emergence of the crop and wild oats. **Sugar beets** — Carbyne at 6 to 8 ounces per acre.

Apply when the majority of the wild oats are in the 1½ to 2 leaf stage (4 to 9 days after emergence). Timing is important as the degree of control decreases rapidly when application is made prior to or following this period of growth. Carbyne should be applied with low-volume (4 gal./acre) and higher pressures (at least 45 psi.). The lower recommended rate should

be used only when soil moisture, fertility and temperature are conducive to good crop and weed growth. The higher recommended rate should be used when heavy wild oat infestations are encountered (100 or more/sq.yd.) and when the crop is suppressed in growth because of inadequate moisture, low soil fertility or other adverse growing conditions. Temporary damage to wheat and barley may occur if treated after the 3 leaf stage (14 days or more after emergence).

ALWAYS READ AND FOLLOW LABEL INSTRUCTIONS

For more complete information on Chemical Weed Control Recommendations refer to the following Manitoba Department of Agriculture Publications:

Chemical Weed Control in Grain Crops

Chemicals for Wild Oats Control

Weed Control in Special Crops.

Chemical Weed Control in Vegetable Crops and Lawns

Timing—the key to Thistle Control.

INSECT CONTROL RECOMMENDATIONS

FOLLOW INSTRUCTIONS ON INSECTICIDE LABEL CAREFULLY WITH REGARD TO PRECAUTIONS IN HANDLING AND AS TO RESIDUE

Information on control of insect pests of field crops and stored grain can be found in the following bulletins:

1. Field Crop Insects and Their Control —
   Pub. 277, 1964 (provincial)

2. Insects and Mites in Farm-Stored Grain in Western Canada —
   Pub. 1131, 1961 (federal)

These publications are available from agricultural representatives and from the Publications Branch, Manitoba Department of Agriculture and Conservation, 711 Norquay Building, 401 York, Winnipeg 1, Manitoba.

By Authority of Hon. George Hutton, Minister of Agriculture & Conservation
Printed by R. S. Evans, Queen's Printer for the Province of Manitoba